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SPECIFICATION FOR LIFEBOATS' STEEL BLOCKS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 5

September 1982

Indian Standard

SPECIFICATION FOR LIFEBOATS' STEEL BLOCKS

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(*Continued on page* 2)

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(*Continued from page* 1)

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Indian Standard

SPECIFICATION FOR LIFEBOATS' STEEL BLOCKS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 October 1981, after the draft finalized by the Marine Instruments and Safety Aids Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 Lifeboats' steel blocks are used with the luffing type boat davits.

0.3 Statutory authorities/classification societies have their own regulations for the construction and testing of lifeboats' steel blocks used on board ships. These rules take into consideration the latest ILO Code of practice of safety and health in dock work.

0.4 In the preparation of this standard, assistance has been derived from JIS F 3420-1977 Lifeboats' steel blocks, issued by Japanese Industrial Standards Committee (JISC).

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the material, dimensions for the various types and parts for lifeboats' steel blocks for use with the luffing type boat davits.

2. DESCRIPTION

2.1 Lifeboats' steel blocks consist of the following parts:

a) Sheave
b) Cheeks
c) Supporting straps
d) Axle pin

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*Rules for rounding off numerical values (*revised*).

e) Swivel
f) Thimbles
g) Distance piece between straps
h) Beckets

3. TERMINOLOGY

3.0 For the purpose of this standard, the following definitions shall apply.

3.1 Cheeks — Cheeks are the side plates fitted on either side of the sheave.

3.2 Safe Working Load — The maximum permissible load in tonnes for the rope of one of the single sheave blocks to take on one end.

3.3 Nominal Size — The diameter of the sheave in millimetres is the nominal size of the block.

4. MATERIAL

4.1 The material used for the various parts of the block shall be as indicated below:

Name of Part	*Material Conforming to*
a) Sheave	IS : 1865-1974[*] Grade 3 B IS : 2107-1977[†] IS : 2108-1977[‡] IS : 1570-1961[§] Grade C20 IS : 1030-1974[‖]
b) Bush for sheave	IS : 318-1962[¶]
c) Cheeks	IS : 1570-1961[§] Open hearth steel, fully killed of C15 grade
d) Supporting strap	IS : 1570-1961[§] Open hearth steel, fully killed of C15 grade
e) Axle pin	IS : 1570-1961[§] Open hearth steel, fully killed of C15 grade
f) Swivel	IS : 1570-1961[§] Grade C20
g) Beckets	IS : 1570-1961[§] Open hearth steel, fully killed of C15 grade
h) Thimbles	IS : 1570-1961[§] Grade C15 Mn 75

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[*] Iron castings with spheroidal or nodular graphite (*second revision*).
[†] Specification for whiteheart malleable iron castings (*first revision*).
[‡] Specification for blackheart malleable iron castings (*first revision*).
[§] Schedules for wrought steel for general engineering purposes.
[‖] Carbon steel castings for general engineering purposes (*second revision*).
[¶] Specification for leaded tin bronze ingots and castings (*revised*).

5. CLASSIFICATION

5.1 The blocks shall be classified as given in Table 1.

TABLE 1 CLASSIFICATION OF BLOCKS

Type	Nominal Diameter, mm		
1AL	180	210	240
1BS	180	210	240
1BL	180	210	240
2AL	180	210	240
2AS	180	210	240
2BS	180	210	240

Note 1 — The digits 1 and 2 in the Type represent the number of sheaves.

Note 2 — The second letter A in the Type represents the blocks without becket and B with becket.

Note 3 — The third letter L in the Type represents the blocks with links and S with shackles.

6. CONSTRUCTION, SHAPE AND DIMENSIONS

6.1 The construction, shape and dimensions shall conform to Tables 2 to 8 and shall conform to the following requirements:

a) Grease cups conforming to IS : 4672-1968* may be used in place of grease nipples conforming to IS : 4009-1967†;

b) Split pins conforming to IS : 549-1974‡;

c) Shackles used for types 1BS, 2AS and 2BS conforming to IS : 6132-1971§;

d) Thimble used for types 1BS, 1BL and 2BS conforming to IS : 2315-1978||;

e) Cheeks may be provided with a rubbing plate to protect the rope;

f) Cheek and fork may be secured by countersunk head bolt or rivet;

g) Swivel part shall be so constructed as to be lubricated with oil or grease; and

h) Screw threads on swivel part shall conform to IS : 4218-1976¶.

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*Specification for grease cups.

†Specification for grease nipples.

‡Specification for split pins (*second revision*).

§Specification for shackles.

||Specification for thimbles for wire ropes (*first revision*).

¶Specification for ISO metric screw threads.

7. TESTING

7.1 The blocks as a whole covered by this standard shall be individually tested in static condition to a proof load of 2·5 times the safe working load of the blocks as shown in Table 9. The proof loads and the safe working loads corresponding to the nominal size of the blocks are also indicated in Table 9. The test load shall be maintained for a period of 5 min.

7.2 At the end of the test, the blocks shall be checked for free rotation, then opened and all parts examined for permanent deformation or other defects in any of the parts. The blocks shall be approved subject to there being no permanent deformation on any of the parts.

8. DESIGNATION

8.1 The blocks shall be designated by their type, nominal diameter and this Indian Standard.

Example :

A lifeboats', steel block of type 1AL and nominal dia 180 mm shall be designated as:

Lifeboats' Steel Block 1AL, 180 IS : 10007

9. MARKING

9.1 All lifeboats' steel blocks shall be marked on the strap in an indelible manner with the following:

a) The manufacturer's identification mark,

b) Nominal size,

c) Safe working load, and

d) The inspecting authority's seal with date of test.

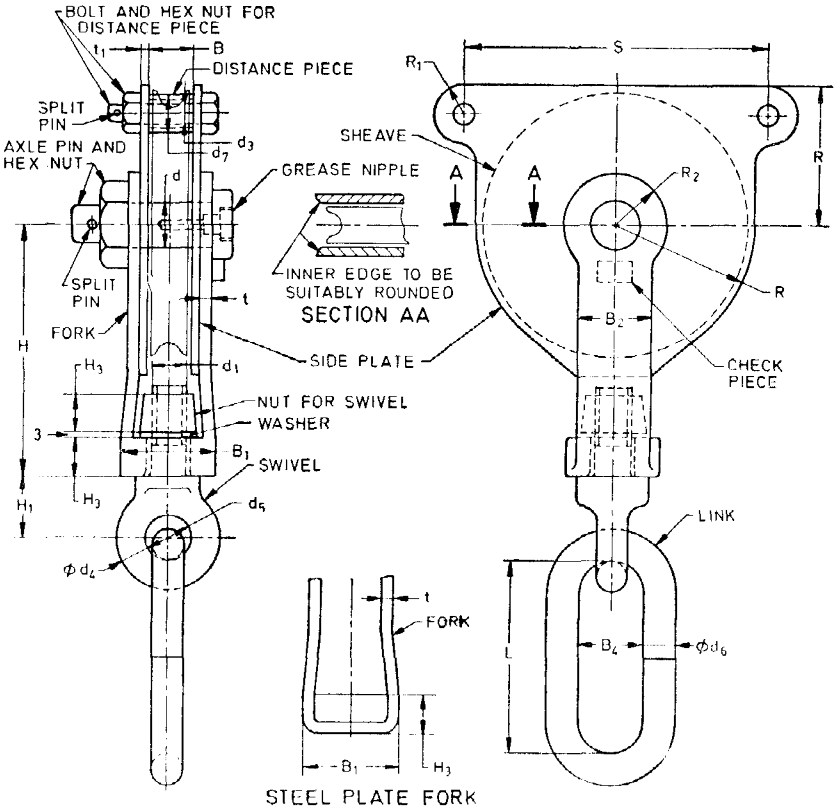
9.1.1 Lifeboats' steel blocks may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

TABLE 2 DIMENSIONS FOR STEEL BLOCK, TYPE 1AL

(*Clause* 6.1)

All dimensions in millimetres.



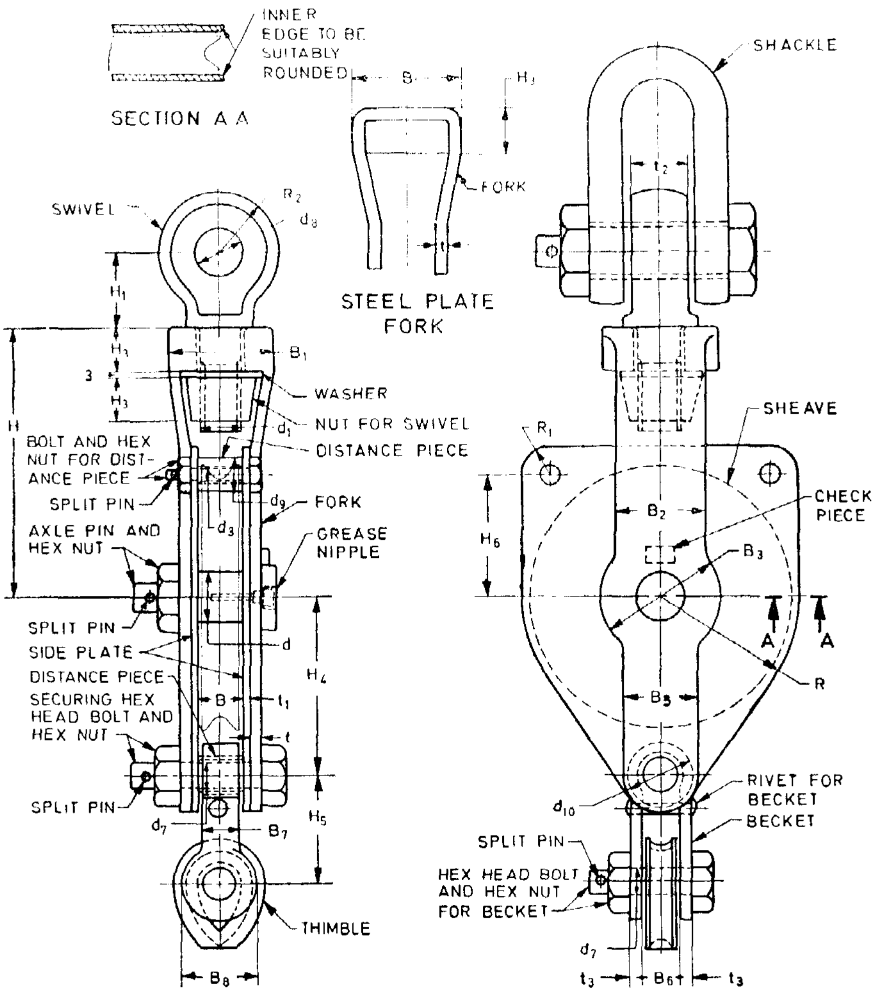
NOMINAL DIAMETER	B	B_1	B_2	B_4	d	NOMINAL SIZE d_1	NOMINAL SIZE d_3	d_4	d_5	d_6	d_7	H	H_1	H_3	L	R	R_1	R_2	S	t	t_1	APPLICABLE DIA OF STEEL WIRE ROPE	CALCULATED MASS (kg)
180	29	64	50	44	32	M25×2	M12	20	30	22	15A	170	40	26	130	95	20	35	206	9	4·5	12	9·65
210	33	72	55	50	35	M30×2	M12	24	36	26	15A	200	50	30	150	110	20	40	236	10	4·5	14	14·08
240	37	84	65	60	40	M36×3	M16	28	42	30	20A	230	60	35	170	125	25	45	270	12	6	16	22·21

Remark : The calculated mass includes that of sheave.

TABLE 3 DIMENSIONS FOR STEEL BLOCKS, TYPE 1BS

(*Clause* 6.1)

All dimensions in millimetres.



NOMINAL DIAMETER	B	B_1	B_2	B_3	B_5	B_6	B_7	B_8	d	NOMINAL SIZE d_1	NOMINAL SIZE d_3	d_7	d_8	d_9	d_{10}	H	H_1	H_3	H_4	H_5	H_6
180	29	70	60	80	50	24	26	52	32	M30×2	M12	M27	35	15A	25A	185	50	30	120	75	85
210	33	80	70	90	56	26	30	58	35	M36×3	M12	M30	42	15A	32A	215	60	35	140	80	95
240	37	92	80	100	60	30	34	62	40	M40×3	M16	M33	46	20A	32A	245	70	40	160	85	105

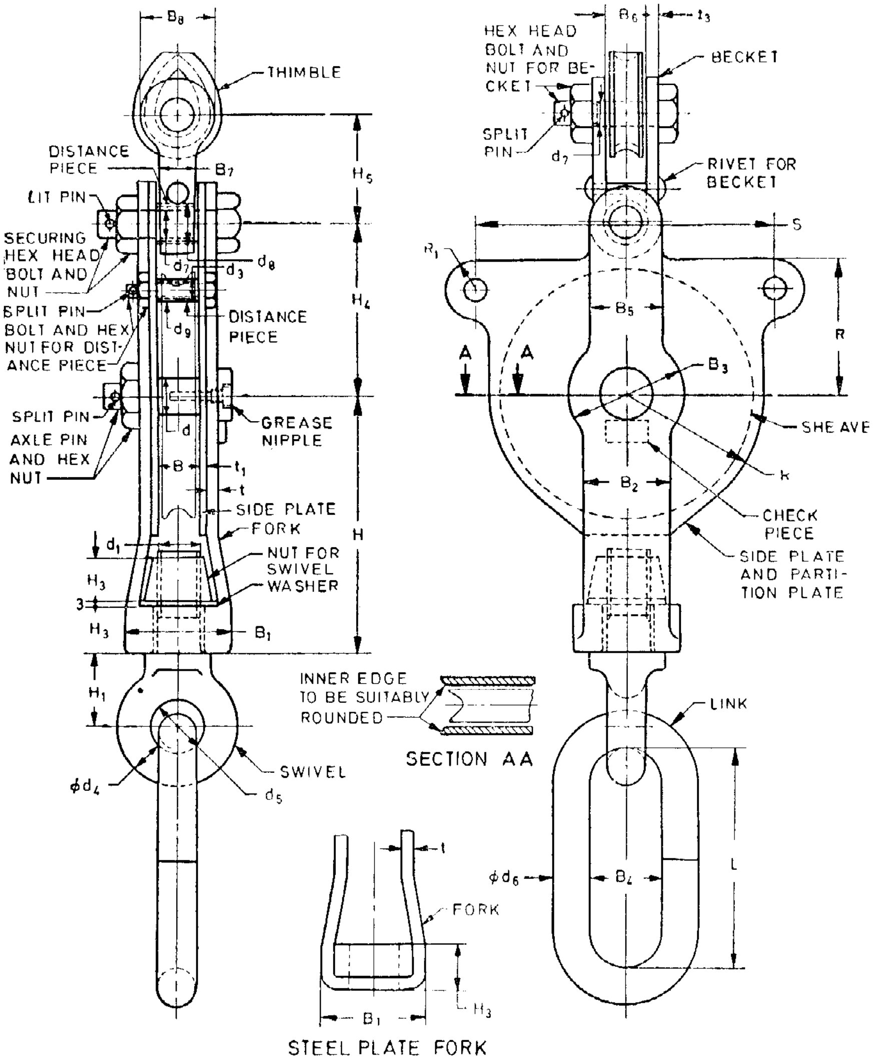
NOMINAL SIZE	R	R_1	R_2		t_1	t_2	t_3	SHACKLE	THIMBLE	APPLICABLE DIA OF STEEL WIRE ROPE	CALCULATED MASS (kg)
180	95	20	40	9	4·5	38	8	SB 26	B12	12	16·78
210	110	20	48	10	4·5	45	9	SB 32	B14	14	25·97
240	125	25	52	12	6	50	11	SB 36	B16	16	38·38

Remark : The calculated mass includes those of sheave, shackle and thimble.

TABLE 4 DIMENSIONS FOR STEEL BLOCKS, TYPE 1BL

(*Clause* 6.1)

All dimensions in millimetres.



NOMINAL DIAMETER	B	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	d	NOMINAL SIZE		d_4	d_5	d_6	d_7
											d_1	d_3				
180	29	70	60	80	50	50	24	26	52	32	M30×2	M12	24	36	26	M27
210	33	80	70	90	60	56	26	30	58	35	M36×3	M12	30	44	32	M30
240	37	92	80	100	70	60	30	34	62	40	M40×3	M16	34	50	36	M33

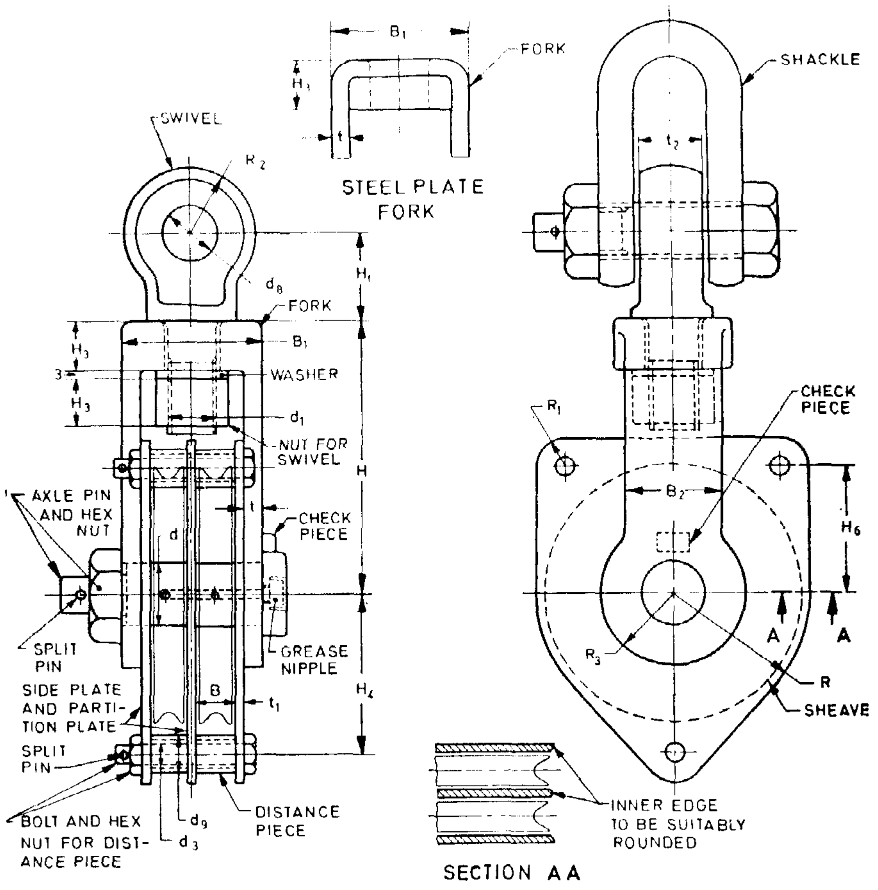
NOMINAL DIAMETER	d_8	d_9	H	H_1	H_3	H_4	H_5	L	R	R_1	S		t_1	t_3	THIMBLE	APPLICABLE DIA OF STEEL WIRE ROPE	CALCULATED MASS (kg)
180	25A	15A	180	50	30	120	75	150	95	20	206	9	4·5	8	B12	12	14·48
210	32A	15A	210	60	35	140	80	180	110	20	236	10	4·5	9	B14	14	22·13
240	32A	20A	240	70	40	160	85	210	125	25	270	12	6	11	B16	16	33·58

Remarks : The calculated mass includes those of sheave and thimble.

TABLE 5 DIMENSIONS FOR STEEL BLOCKS, TYPE 2AS

(*Clause* 6.1)

All dimensions in millimetres.



Nominal Diameter	B	B_1	B_2	d	Nominal Size d_1	Nominal Size d_3	d_8	d_9	H	H_1	H_3	H_4	H_6	R	R_1
180	29	95·5	65	45	M36×3	M12	40	15A	190	60	35	110	85	95	20
210	33	107·5	75	50	M40×3	M12	46	15A	210	70	40	125	95	110	20
240	37	124	85	58	M45×3	M16	52	20A	235	80	45	145	105	125	25

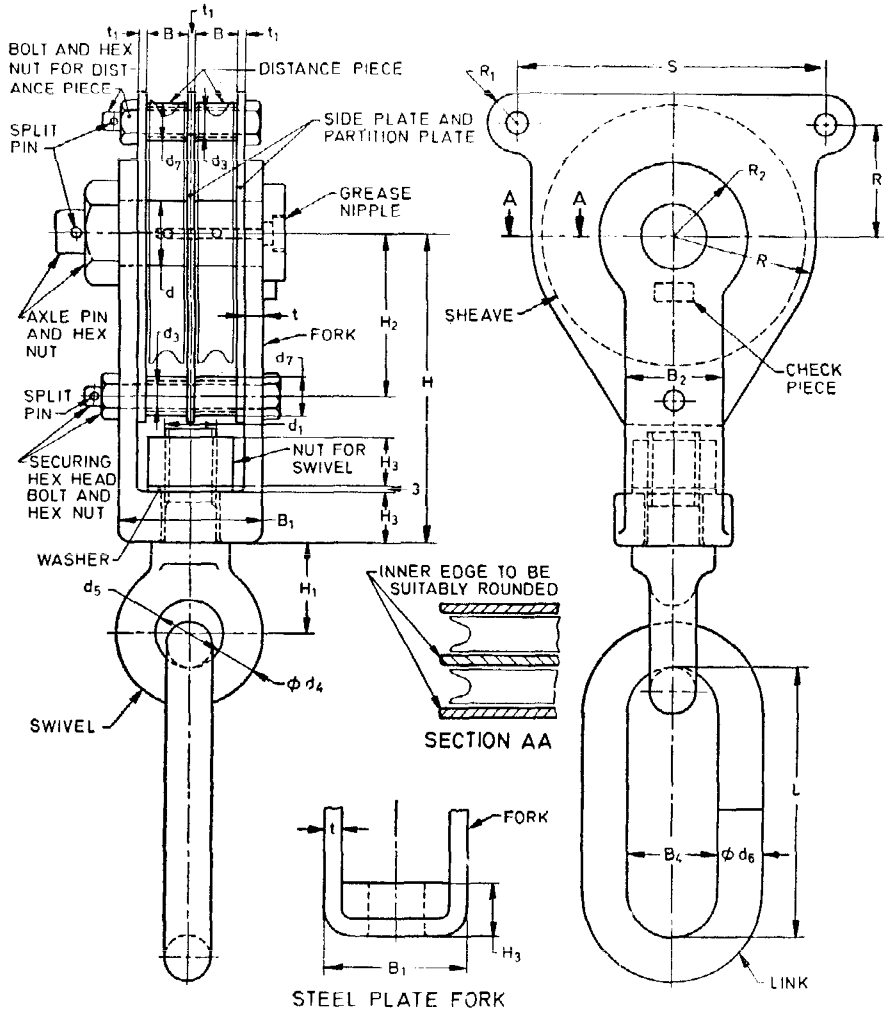
Nominal Diameter	R_2	R_3	t	t_1	t_2	Shackle	Applicable Dia of Steel Wire Rope	Calculated Mass (kg)
180	46	50	12	4·5	42	SB 30	12	22·71
210	52	55	14	4·5	50	SB 36	14	33·41
240	58	60	16	6	56	SB 40	16	50·76

Remark : The calculated mass includes those of sheaves and shackle.

TABLE 6 DIMENSIONS FOR STEEL BLOCKS, TYPE 2BS

(*Clause* 6.1)

All dimensions in millimetres.



Nominal Diameter	B	B_1	B_2	B_4	d	Nominal Size d_1	Nominal Size d_3	d_1	d_5	d_6	d_7	H	H_1	H_2	H_3	L	R
180	25	95·5	65	60	45	M36×3	M12	28	42	30	15A	210	60	110	35	180	95
210	33	107·5	75	70	50	M40×3	M12	34	50	36	15A	235	70	125	40	210	110
240	37	124	85	80	58	M45×3	M16	38	56	40	20A	270	80	145	45	240	125

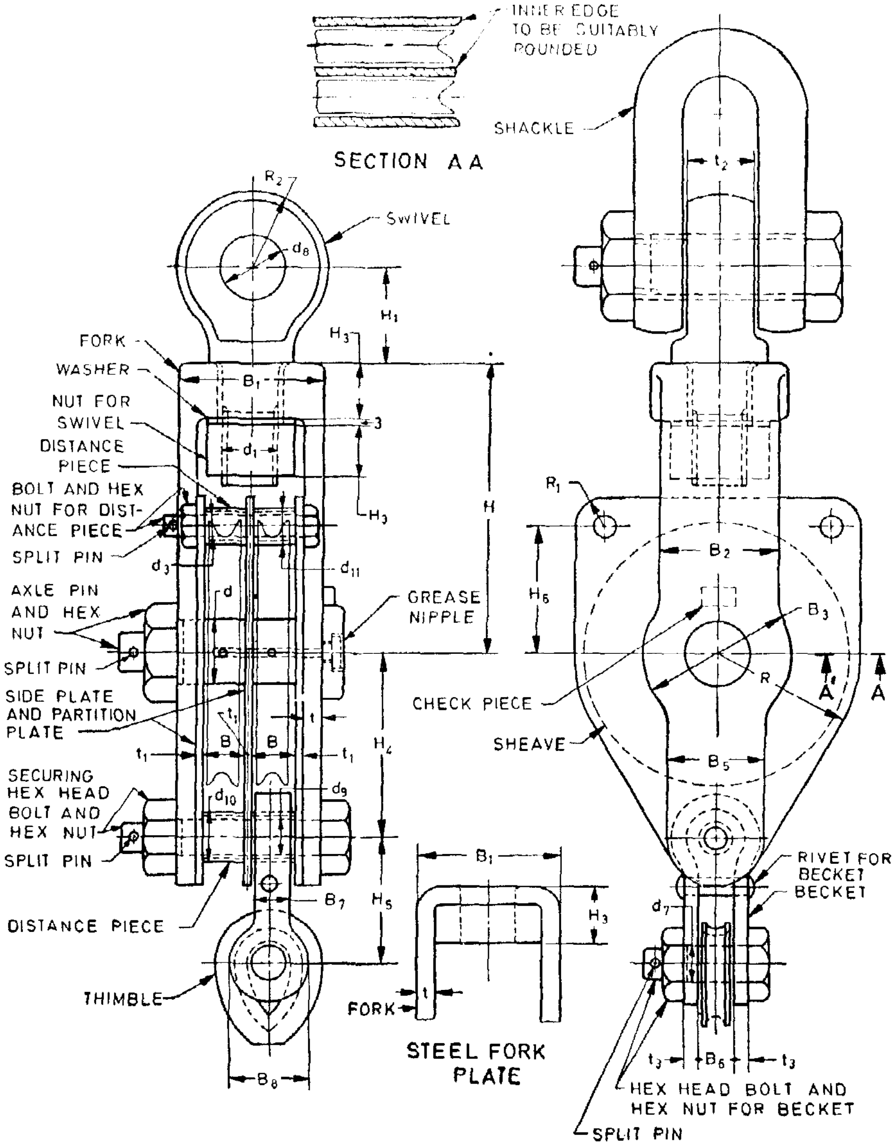
Nominal Diameter	R_1	R_2	S	t	t_1	Applicable Dia of Steel Wire Rope	Calculated Mass (kg)
180	20	50	206	12	4·5	12	18·62
210	20	55	236	14	4·5	14	28·24
240	25	60	270	16	6	16	42·65

Remark : The calculated mass includes those of sheaves.

TABLE 7 DIMENSIONS FOR STEEL BLOCKS, TYPE 2BS

(*Clause* 6.1)

All dimensions in millimetres.



Nominal Diameter	B	B_1	B_2	B_3	B_5	B_6	B_7	B_8	d	Nominal Size		d_7	d_8	Nominal Size d_9	d_{10}
										d_1	d_3				
180	29	95·5	80	100	64	24	26	52	45	M39×3	M12	M27	44	M30	32A
210	33	107·5	90	115	72	26	30	58	50	M45×3	M12	M30	50	M36	40A
240	37	124	100	130	76	30	34	62	58	M50×3	M16	M33	56	M39	40A

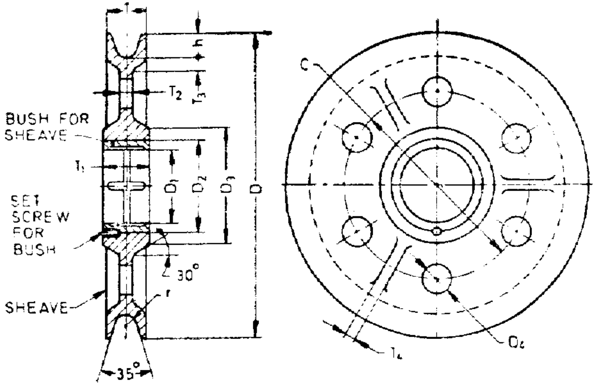
Nominal Diameter	d_{11}	H	H_1	H_3	H_4	H_5	H_6	R	R_1	R_2	t	t_1	t_2	t_3	Shackle	Thimble	Applicable Dia of Steel Wire Rope	Calculated Mass (kg)
180	15A	195	65	38	125	85	85	95	20	50	12	4·5	47	8	SB34	B12	12	30·53
210	15A	220	75	45	145	90	95	110	20	55	14	4·5	53	9	SB38	B14	14	44·63
240	20A	245	85	50	160	95	105	125	25	65	16	6	62	11	SB44	B16	16	68·47

Remark : The calculated mass includes those of sheaves, shackle and thimble.

TABLE 8 DIMENSIONS FOR SHEAVES

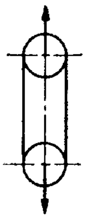
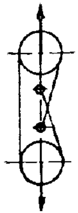
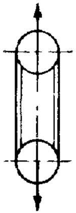
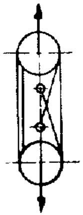
(*Clause* 6.1)

All dimensions in millimetres.



BLOCK		D	h	r	T	T_1	T_2	T_3	T_4	D_1	D_2	D_3	C	D_4
Type	Nominal Diameter													
1AL	180	180	14	6·5	24	28	7	8	6	32·5	45	60	105	20
1BS	210	210	16	7·5	28	32	8	9	7	35·5	48	65	120	28
1BL	240	240	18	8·5	32	36	9	10	8	40·5	54	72	137	34
2AS	180	180	14	6·5	24	28	7	8	6	45·5	58	73	112	14
2AL	210	210	16	7·5	28	32	8	9	7	50·5	63	80	128	20
2BS	240	240	18	8·5	32	36	9	10	8	58·5	72	90	146	25

TABLE 9 PROOF LOADS AND SAFE WORKING LOADS CORRESPONDING TO DIFFERENT NOMINAL SIZES

NOMINAL DIA, mm												
Nominal dia, mm	180	210	240	180	210	240	180	210	240	180	210	240
Proof load, kN	58·8	78·5	102·3	83·4	112·8	147·1	105·9	145·1	189·3	127·5	174·6	228·5
Safe working load, tf	2·4	3·2	4·2	3·4	4·6	6·0	4·3	5·9	7·7	5·2	7·1	9·3